Incoming
TASK 3372
m/045/0077
cc: Leslie
Tom

0002

Notice of Intention

To Begin a Large Mining Operation

Geneva Rock Products, Inc.

N. Grantsville Quarry

DOGM NO. M/045/0077

Submitted by:

Geneva Rock Products, Inc.

1565 W. 400N.

Orem, UT 84057

To:

Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84114-5801

0002

Geneva Rock Products – N. Grantsville Quarry – NOI

Table of Contents

Geneva Rock Products, Inc. – N. Grantsville – NOI

Table of Contents

Figures

R647-4. Large Mining Operations

R647-4-101. Filing Requirements and Review Procedures

This NOI is submitted to the Utah Division of Oil, Gas and Mining (DOGM) in compliance with part R647-4 of the Utah Minerals Reclamation program by Geneva Rock Products, Inc.

The proposed quarrying operation is located in Tooele County, Utah, on a 539-acre parcel owned by Geneva Rock Products, Inc. (Geneva). This site has not previously been mined, but is situated adjacent to a limestone quarry owned by Utah Portland Quarries, Inc., a division of Buzzi Unicem. Portions of the proposed quarry is located in Sections 16, 17, 19 and 20 of T2S, R6W, SLBM.

R647-4-102. Duration of the Notice of Intention

It is understood that, when approved, this NOI, including any subsequently approved amendments or revisions, remains in effect for the life of the mine. However, Geneva acknowledges that the Division of Oil, Gas, and Mining (DOGM) may review the permit and require updated information and modifications when necessary.

R647-4-103. Notice of Intention to Begin Large Mining Operations

Geneva's NOI addresses the requirement of the rules listed in this section as follows:

104. Operator(s), Surface and Mineral Owner(s)

105. Maps, Drawings, and Photographs

106. Operation Plan

108. Hole plugging Requirements

109. Impact Assessment

110. Reclamation Plan

112. Variance

113. Surety

R647-4-104. Operator, Surface and Mineral Owners

1. Mine Name: N. Grantsville Quarry
2. Operator: Geneva Rock Products, Inc.
   1565 West 400 North
   Orem, Utah 84057

   Phone: 801-765-7800
   Fax: 801-765-7830
   Email: http://www.genevarock.com/

   Type of Business: Corporation
   Utah Business Entity No.: 570716-0412
   Local Business License No.: 2008088
   Issued by: Tooele, City

   Registered Utah Agent: Al Schellenberg
   1565 West 400 North
   Orem, UT 84057
   Phone: 801-765-7800
   Fax: 801-765-7830
   Email: aschellenberg@genevarock.com

3. Permanent Address: Geneva Rock Products, Inc.
   1565 West 400 North
   Orem, UT 84057
   Phone: 801-765-7800
   Fax: 801-765-7830
   Email: http://www.genevarock.com/

4. Contact Person for Permitting, Surety, Notices:
   Mike Edwards
   Geneva Rock Products, Inc.
   P.O. Box 538

Orem, Utah 84059
Phone: 801-281-7890
Fax: 801-641-2117
Email: medwards@genevarock.com

5. Location of Operation: Portions of S.16,17,19 & 20, T2S, R6W, SLBM

6. Ownership of Land Surface: Geneva Rock Products, Inc.
1565 West 400 North
Orem, UT 84057

7. Owners of Record of Mineral to be Mined:
Geneva Rock Products
1565 West 400 North
Orem, Utah 84057

8. BLM Lease or Project File Numbers:
None

9. Adjacent Land Owners: Utah Portland Quarries, Inc
C/O Buzzi Unicem
100 Broadhead Road
Bethlehem, Pennsylvania 18017-8989

Jay A. Anderson
799 N. 600 W.
Grantsville, Utah 84029-9366

U.S.D.I. Bureau of Land Management
2370 S. 2300 W.
Salt Lake City, UT 84119
(801) 977-4300

Grantsville, LLC.
944 E. 800 S.
Bountiful, UT 84010

10. Have the land, mineral, and adjacent owners been notified in writing?

No.

11. Does Permitee/Operator have a legal right to enter and conduct mining operations on the land covered by this notice? Yes.

R647-4-105. Maps, Drawings, and Photographs

Maps, drawings, and photographs are provided as requested on Form MR-LMO. The base map Checklist is referenced below by letters and parentheses (a,b,c,d,or e) that represents which of the bullet items is addressed on each map.

105.1.Base Maps: Figures 1 and 2

Figure 1 Base and Mine Location Map and shows the mine area and surroundings and is printed at a scale of 1"=3000'. It shows streams, springs, water bodies, road, buildings, topography and utilities as required in (B). There are no known underground workings on the site. The only utility within the proposed permit area is an overhead power line going through the property in an east-west direction along the 2 track access road.

Figure 2 Land Ownership Map is printed at a scale of 1"=900' and shows the property boundaries, surface ownership of the mine and adjacent lands, and access routes.

105.2. Surface facilities maps: Figures 3 and 4

Figure 3: Existing Contours Map, is printed at a scale of 1"=600' and shows existing surface facilities, roads and washes that pass through or near the lands to be affected. There are no test borings, pits, or boreholes.

Figure 4: Mine Plan Map, is printed at a scale of 1"=600' and shows drainage control structures, topsoil storage areas. There is no overburden or waste rock, thus no storage areas are shown. No waste water is generated in this mine, therefore no discharge areas are shown. Storm water is initially impounded in a retention pond near the entrance of the quarry, then later against the high wall in the back of the quarry. After the quarry has been sufficiently developed to hold the water against the high wall the retention pond will be used as a reservoir for the wash plant.

Figure 4a: Phasing Map, is printed at a scale of 1"=600' shows the phased progression of the mine and the respective bonded acreage of each phase.

105.3. Reclamation Treatments: Figure 5

Figure 5 is a Reclamation Treatments map. This map is printed at a scale of 1"=600'. It shows details about reclamation treatment areas, including what disturbance, such as high walls, topsoil stockpiles and roads, will be reclaimed. A border outlining the extent of the area to be reclaimed vs. the affected area is shown. While no topsoil will be spread on the high walls because they are too steep to re-vegetate. The benches will be covered with topsoil and re-seeded.

All high walls will be left at a benched 1H:1V These areas are shown on the map. The unconsolidated top layer of alluvium will be sloped at 2H:1V. All floor slopes will be 3H:1V or less.

105.4. Additional Maps:

Figure 6 shows cross-sections of the reclaimed pit.

Figure 6a shows the detail of how the high walls will be benched.

Figure 7 is a Utah Division of Water Rights map showing area water rights.

Figure 7a is a Water Shed Map showing drainage areas flowing into the quarry.

Figure 7b shows detail on stone check dams to be used for erosion control.

Figure 8 is a soils map printed at a scale of 1"=1,200'showing existing soil types.

Figure 9 is a Geology map showing the underlying geology of the mine.

105.5 Photographs of the existing vegetation and topography are included in Appendix A

R647-4-106: Operation Plan

106.1. Mineral to be Mined

The N. Grantsville quarry will produce crushed and/or screened aggregate for construction materials including concrete and asphalt.

106.2. Type of operation to be conducted

Geneva Rock Products, Inc. (Geneva) primarily extracts aggregate rock for use as road base, landscape rock, and other construction products. The projected future use of the aggregate will also include concrete and asphalt production.

Mining Operation

Geneva will remove rock from the active mine area by drilling, blasting, and dozing methods. New disturbance occurs at the top and sides of the hill slope. The hill slope will be developed in phases, shown in order of development on **Figure 4a.** Each numbered area contains enough material to last for roughly 10 to 15 years. Mining may extend into the proceeding area prior to completely mining out the previous area in order to maximize safety, rock quality, and production needs. All haul roads will be confined within the disturbance boundaries or upon the Little Mountain Road which is maintained by Tooele County.

Rock is removed by drilling and blasting to release a "lift" of rock approximately 50 feet deep and up to two acres in size. Extraction of this loosened rock occurs by sequentially working downward through the exposed rock. When all blasted rock is removed from the first lift, another blast is set to free this lower lift of rock for removal and processing. Rock is removed from the working face or feed zone; with a loader and either placed in dump trucks or transported directly to the processing area where the rock is separated and adjusted to specific sizes for further processing. The facility is a crushing and sizing operation. Sizing for the final product is determined by specifications provided by customers.

Crushing Operation

Once the rock is removed from the working face, the material is brought a short distance to the "jaw crusher" by a front-end-loader where it is broken down to 6-8" for initial sizing. The crushed rock is moved by conveyor to a 3,000 to 5,000 CY surge hopper. Aggregate is metered from the surge hopper, by conveyor, to the secondary crushing unit, which may either be a primary horizontal impact crusher, or a roller cone crusher. The secondary crusher crushes the aggregate to 2" minus. Conveyors then direct the aggregate to 3-deck sizing screens to split the aggregate stream into three different product sizes.

Any oversize aggregate not passing one of the three screen sizes is directed by conveyor to a tertiary crusher, which is either an impact crusher or a fine crushing, roller cone crusher. The aggregate from the tertiary crusher is then directed back up to the 3-deck screens in a closed circuit. The crushing plant is controlled by motor control circuitry located in the control tower manned by the crusher operator.

The finished products come out of the crushing plant and are conveyed or moved by loaders to the aggregate storage piles where they are stored until sold. When an order is placed for a

particular size aggregate, it is loaded into trucks for delivery to the customer or transported to either the concrete plant or asphalt plant for further processing. All conveyors are equipped with spray bars that spray water at drop points to control fugitive dust.

Blasting Practices

Blasting will be used in the mining process at the N. Grantsville Quarry. Blasting is not conducted by Geneva, but is subcontracted out to a qualified company trained in blasting design and practices. All blasting will be done in accordance with MSHA regulations. Unless needed, no seismic monitoring of blasting will be done at the N.Grantsville Quarry.

The mine will conduct blasting up to 50 times per year. Blasting rounds include 25 ounce down-hole primers, detonator cords, and Ammonium Nitrate-Fuel Oil (ANFO) pellets. Typical blasting design is 50 to 100 holes drilled 50-100 feet deep. It is estimated that each hole will be set on a 13ft. X 13 ft. grid.

Before blasting occurs, the tower sounds a warning siren to alert all personnel of impending blast; at which time all personnel and equipment are removed from quarry area. The siren is then sounded again and the blaster turns on his emergency flashing lights. The blast is then detonated. No one enters the blasting zone until the blaster gives an all-clear whistle.

Concurrent Reclamation

No reclamation will take place within the first 20-year block. Increased production will force utilization of all additional mined-out acres for staging, sorting, or processing. Reclamation will take place once the quarry is mined out. Reclamation is discussed in Section 110 below.

106.3. Estimated Acreage

Approximately 539 acres will be disturbed over the life of the mine. This figure includes all access roads, storage piles, processing areas and mine areas. There is presently no ground disturbance on the proposed mine area. The Geneva will confine its mining activities to 95-acres for the next 10 years.

Table 1: Areas to be affected during the next 10- years, and over life of Mine

Area	Total Affected Acreage	Description and Notes	Total Cubic Yards of Topsoil Salvaged
Existing Mine Disturbance	0	Pre-existing disturbance	0
Areas of new mining disturbance	62	To be disturbed in 1-10 years	50,013
Overburden and waste dumps	0	All mined materials are processed and sold	0
Ore and product stockpiles	20	20 acres	16,133
Topsoil stockpiles	0	The present acreage of haul roads in the pit will be maintained	0
Plant Staging Areas	10	Future Asphalt & Concrete Plants	8,067
Sediment Control Ponds	3	Run-off is contained in bermed work area or storm retention basin	2420
Total 10-year disturbance	**95**		**76,633**
Phase 2	95	To be disturbed during 10-20 years	76,633
Phase 3	156	To be disturbed during 20-30 years	125,840
Phase 4	193	To be disturbed during 30-40 years	155,687
Total disturbance – life of mine	539		434,793

106.4. Nature of material, including waste rock/overburden, and estimated tonnage

Ore

The annual amount of ore generated is greatly dependent on quarterly demand. We project the average annual production for the next five years to average 750,000 tons (395,000 CY) per year.

Historic Mining

Mining has occurred on lands adjacent to the N. Grantsville Quarry for over 100 years. Most of the mineral extraction in the area has been for limestone to produce portland cement or for lime production. The quality and durability of the aggregate make it very useful as road building and construction aggregate.

106.5. Soils

All existing top soil will be removed and stored in a stable condition, and used for reclamation of disturbed areas.

Soils map units are shown on **Figure 8**, Soils. Samples of the top 6-inches of soil was collected at Point TP-1, through TP-6 at random locations to represent the diversity of soils located on the mine property. These samples were taken to characterize soils in preparation for future soil salvage. The sample locations are shown on **Figure 8**. Analytical sampling results are shown in **Table 2** below.

Table 2: Analytical Results of Fall, 2008 Soil Samples, Top Six Inches of Soil*

Soil Parameter	TP#1	TP#2	TP#3	TP#4	TP#5	TP#6	Units
Texture	Loam	Loam	Sandy Clay Loam	Clay Loam	Loam	Clay Loam	Uniform Soil Classification
pH	7.44	7.28	7.43	7.56	7.47	7.29	@25°C, pH units
SAR(sodium absorption ratio)	.86	.56	.70	.74	.68	.92	
Percent Organic Matter	3.22	2.72	1.56	2.25	2.75	2.01	Total Volatile Solids as % of total sample
Nitrate Nitrogen	11.12	3.84	5.02	8.01	9.35	33.32	ppm
Phosphorus (as P)	21.12	4.05	4.70	5.88	14.46	6.31	ppm
Potassium (as K_2O)	579.20	195.2	188.8	412.8	438.4	284.8	ppm

The texture of all soil samples were consistent from top to bottom.

There are five soil types within the quarry boundary. These are the Abela gravelly loam, 2 to 8% slopes, Abela Very Gravelly Loam, 5 to 15 percent slopes, Amtoft-Rock

Outcrop Complex, 30 to 70 percent slopes, and the Hiko Peak Very Stony Loam, 2-8% slopes and Ladar-Lundy-Rock outcrop association, 30-60% slopes (USDA NRCS, 2006). These soils are described in **Tables 3 and 4** below. **Figure 8** shows the locations of these soils within the mine area.

Table 3: Soil Descriptions for Grantsville Mine

Soil Type	Brief Map Unit Description	Ecological site	Forage Productivity: high, normal, low years
Abela gravelly loam, 2-8% slopes	Fan remnants. Parent material is alluvium derived from limestone and/or quartzite. Well drained. No flooding. CaCO3 max at 40%, Gypsum max at 0%. Avail. water cap. moderate.	Upland Gravelly Loam (Mountain Big Sagebrush)	1,000 lb/ac, 800 lb/ac, 400 lb/ac
Abela very gravelly loam, 5-15 % slopes	Fan remnants. Parent material is alluvium derived from limestone and/or quartzite. Well drained. No flooding. CaCO3 max at 40%, Gypsum max at 0%. Avail. water cap. low.	Upland Gravelly Loam (Mountain Big Sagebrush)	850 lb/ac, 650 lb/ac, 350 lb/ac
Amtoft-Rock Outcrop complex, 30-70% slopes	Mountain and hillsides. Parent material is colluvium derived from limestone and/or residuum of weathered limestone. Depth to lithic bedrock: 10-20 inches. CaCO3 max at 80%, Gypsum at 0%.	Upland Gravelly Loam (Mountain Big Sagebrush)	900 lb/ac, 700 lb/ac, 500 lb/ac
Hiko Peak Very Stony Loam, 2-8% slopes	Fan remnants of mixed alluvium. Well drained. No flooding. CaCO3 max at 35%, moderately sodic at 30 inches.	Semi-desert Stony Loam	700 lbs/ac, 600 lb/ac, 400 lb/ac
Lodar-Lundy-Rock outcrop association, 30-60% slopes	Mountainsides. Parent materials colluvium derived from limestone and/or residuum weathered from limestone. Well drained. CaCO3 max at 80%	Mountain Shallow Loam (low Sagebrush)	800 lbs/ac, 600 lb/ac, 400 lb/ac

Table 4: Soil physical and chemical characteristics based on NRCS data

Soil Type	Topsoil depth	Total Depth	CEC (meq /100g)	pH	SAR	CaCO3 %	CaSO4 %	Na Mmhos /cm	Limita-tions

Abela	0-11"	>60"	5-20	7.9-9.0	0	1-40	0	0-4	Cobbles, gravels
Amtoft/ Rock outcrop	0-9"	< 16"	5-15	7.9-9.0	0	20-80	0	0-4	bedrock
Hiko Peak	0-4"	>60"	5.0-15	7.9-9.0	0-13	15-30	0	0-4	cobbles

106.6. Plans for protecting and re-depositing soils

It is estimated that 95 acres of mining disturbance will occur in the next 10 years. At a 6 inch salvage depth, approximately 76,633 cubic yard of topsoil (see table 1) will be salvaged from this area. Depending on the location of the excavation each year (i.e. south facing or east and west facing slopes), actual soil salvage by year may be more or less than that stated above. All stockpiles will be surrounded by a berm to protect against soil loss.

Topsoil and vegetation (made up mostly of grasses, and brush) will be removed together with bulldozers, front-end loaders, and 14-ton to 45-ton dump trucks. Vegetation at the mine site will add negligible volume to soil stockpiles. Over the life of the mine, approximately 539 acres of total disturbance, and as much as 434,793 cubic yards (CY) of soil will be salvaged for reclamation.

More detail on topsoil stripping and protection is included in Sub-section 109.3 below.

106.7 Existing Vegetative communities to establish re-vegetation success

The project area ranges from 4,800 feet elevation at the northeast corner to 5,600 feet elevation at the southwest corner. The mine area will excavate into a minor ridge on the northeast side of Little Mountain, which is on the lower, east-side flanks of the Stansbury Mountains. Color photographs included in Appendix A show the pre-mine conditions at the mine site.

According to the NRCS Ecological Site description (See Table 3 above), the area to be mined is in the Upland Gravelly Loam (Mountain Big Sagebrush) Ecological site. Expected composition of this range site on an average year is listed in Table 6 below. An estimation of abundance based on a vegetation survey conducted May 23, 2007 is listed in Table 7 below. Abundance was ranked in declining order of prevalence as: Abundant, Common, Uncommon, Locally Common, Occasional, and Rare. Abundance was determined by ocular estimate while data was collected, with adjustments to those ratings made the day afterward based on the entire day's observations and quantitative data collected.

Table 6: Expected plant species by percent composition for the Mountain Stony Loam Range Site

Scientific name	Common name	Composition (%)
Shrubs, Trees, and Sub Trees		
Artemisia tridentata	Mountain big sagebrush	25
Purshia tridentata	Antelope bitterbrush	10
	Other perennial shrubs	5
Forbs		
	Perennial forbs	5
Grasses		
Pseudogroegneria spicata	Bluebunch wheatgrass	25
Poa nevadensis	Nevada bluegrass	15
Stipa comata	Needleandthread grass	5
	Other perennial grasses	5

Table 7: Plant species recorded during the May 23, 2007 Vegetation Survey

	Scientific name	Common name	Abundance
	Shrubs, Trees and Sub-trees		
	Artemisia tridentata	Big sagebrush	Abundant
	Chrysothamnus nauseosus	Rubber rabbitbrush	Rare
	Grayia spinosa	Spiny hopsage	Rare
	Gutierrezia sarothrae	Broom snakeweed	Common
	Juniperus scopulorum	Rocky Mt juniper	Locally common
	Tetradymia canescens	Spiny horsebrush	Uncommon

	Scientific name	Common name	Abundance
	Forbs		
*	*Ambrosia tomentosa*	Ragweed	Uncommon
	Antennaria sp.	Pussytoes	Common
	Astragalus utahensis	Utah milkvetch	Uncommon
	Astragalus sp.	Vetch or locoweed	
	Brodiaea douglasii	Brodiaea	Uncommon
	Calochortus nutalli	Sego lily	Common
	Castilleja sp.	Desert paintbrush	Common
	Crepis accuminata	Mountain hawksbeard	Uncommon
	Cryptantha rollinsii	Rollins cryptantha	Common
+	*Cirsium undulatum*	Thistle	Locally abundant
+*	*Erodium cicutarium*	Storksbill	Abundant
	Eriogonum (ovalifolium?)	Sulfur flower	Uncommon
	Hedysarum boreale	Northern sweetvetch	Occasional
	Onopardum acanthium	White evening primrose	Occasional
+*	*Tragopogon dubius*	Salsify	Common
	Grasses		
	Achnatherum hymenoides	Indian ricegrass	Rare
	Agropyron cristatum	Crested wheatgrass	Uncommon
	Psuedoroegneria spicata	Bluebunch wheatgrass	Common
+	*Bromus tectorum*	Cheatgrass	Common
+	*Elymus elymoides*	Squirreltail	Occasional
+*	*Poa bulbosa*	Bulbous bluegrass	Rare

	Scientific name	Common name	Abundance
	Stipa comata	Needle-and-thread-grass	Occasional
	Poa Nevadensis	Nevada bluegrass	Abundant

* Indicative of past disturbance, increasing in distribution

** Currently listed as a Noxious Weed for Utah

\+ Included as weedy species in summary table

Vegetation Cover Levels Sufficient to Establish Re-vegetation Success Standards:

According to the NRCS Ecological Site Description, vegetation on the mine area is dominated by big sagebrush, Nevada bluegrass, and bluebunch wheatgrass. Other significant components include sagebrush (*Artemisia tridentata*), spiny horsebrush (*Tetradymia canescens*), antelope bitterbrush (*Purshia tridentata*) and broom snakeweed (*Gutierrezia sarothrae*).

Based on the vegetation survey this is reasonably representative, with the shrub component being simplified to sagebrush and snakeweed. Cheatgrass was very common on the north end of the project area, and forbs were more common throughout than suggested in the Ecological Site description. Common forbs included silky crazyweed (*Oxytropis sericea)*, *Astragalus spp.*, Northern sweetvetch (*Hedysarum boreale)*, and popcorn flower (*Cryptantha sp.*). Cheatgrass was scattered throughout the project area in small patches at higher elevations on the south and was a major component on the north end of the project area on alluvial slopes below 5,000 feet.

The average vegetation cover for the 15 quadrats was 57 percent and ranged from 30 percent to 85 percent. Percent cover by life form is listed in Table 8 below. To reach 70 percent of the cover existing before mining, the minimum post-mining vegetation cover for all species will need to be 39.9 percent. Listed by life form, minimum cover for shrubs will be 12.6 percent, grasses will be 17.5 percent, and forbs will be 2.1 percent.

Table 8: Percent Cover by Life Form by Quadrats for Grantsville Mine*

Cover Type	Quadrat Number															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Avg.
Shrubs	12	16	36	25	0	5	5	12	72	10	10	5	25	13	31	18
Desirable Forbs	0	1	3	11	1	8	0	3	0	7	6	4	0	3	0	3
Desirable Grasses	12	35	15	30	24	50	35	13	0	35	50	48	5	25	3	25

Cover Type	Quadrat Number															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Avg.
Total Desirable Vegetation	**24**	**52**	**54**	**66**	**25**	**63**	**40**	**28**	**72**	**52**	**66**	**57**	**30**	**41**	**34**	**47**
Weedy Species	36	2	14	4	5	2	15	2	13	3	12	0	7	25	8	10
TOTAL VEG	*60*	*54*	*68*	*70*	*39*	*65*	*65*	*30*	*85*	*55*	*78*	*57*	*37*	*66*	*42*	*57*
Litter*	18	10	3	5	10	10	13	15	15	5	10	10	5	29	5	11
Rock	0	20	0	15	54	20	20	40	0	25	2	23	10	0	3	15
Bare Ground	22	16	30	10	6	5	12	15	0	15	10	10	48	5	50	17
TOTAL	100	100	101	100	100	100	100	100	100	100	100	100	100	100	100	100

* Based on data collected May 23, 2007

106.8. Depth to Groundwater, Overburden material, and Geologic Setting

Groundwater

The closest groundwater rights of similar elevation and geology to the mine site are located in Section 33 of T2S, R6W, approximately two miles to the southeast of the project area but in a similar geologic unit. There are several groundwater rights, mostly artesian springs, listed in Sections 16 and 21 of T2S, R6W – approximately one mile from the project area – but these are at a much lower elevation than the mine and are nearer the edge of the outwash plain that is different geologically from the area to be mined (See **Figures 7**).

One well log was located for Water Right No. 15-1464, located in the NW ¼ NW ¼ NE ¼ Section 33, T2S, R6W. It was drilled at a surface elevation of approximately 5,200 ft. Static water depth was 367 ft. below the land surface on June 30, 1967. Static water depth for water Right No. 15-4172, located in the SW ¼ NW ¼ SE ¼ Section 33, T2S, R6W is listed as being approximately 700 ft below land surface. This, in addition to information in Section R467-109.1, indicates that groundwater is not likely to be encountered on the project area during mining, and depth to groundwater is expected to be well below the maximum extent of mining.

Overburden Material

Other than the top six inches of material set aside for the reclamation purposes as topsoil, all other material is sold as various aggregate products. No overburden, reject materials, or waste material are produced.

Geology of the area

The project area is located within the Basin and Range Physiographic Province on the eastern flanks of the Stansbury Mountains in Tooele County, Utah (BLM, 2003), which extend south from Timpie for about 30 miles to Johnson Pass (Utah Highway 199). They are oriented north-south and rise abruptly from the desert floor. To the east lie Tooele Valley and Rush Valley with elevations ranging from 4500 to 5500 feet (GORP, 2007) (See **Figure 9**, Geology).

The region consists of Cambrian through Pennsylvanian quartzites, carbonates, and shales that were deformed during Mesozoic compression and Cenozoic extension. These events created a broad anticline trending N5°E with 30°W and 60°-overturned east dipping limbs; a large thrust fault cutting diagonally across steeply dipping beds on both blocks, striking N12°W-N11°E dipping 45°-55°E with a flat-ramp-flat geometry from south to north, indicating a pre-existing footwall structure. A major syncline and at least two small asymmetrical sub-parallel mapped folds are located on the east side of the range with vertical to strongly overturned dips along the western flank and 30°-45°SW dips along the eastern flank trending N20°W and plunging steeply to the south. Associated with this deformation are a variety of normal faults both within the range and at the range-basin margin. There are abundant fractured rocks throughout the project area (Copfer, 2001).

Deposition of massive sequences of carbonate rocks (such as limestone and dolomites) accumulated in a shallow marine environment to thicknesses of as much as 30,000 feet. These carbonate deposits are exposed in the many mountain ranges, and form a thick wedge, generally thinning eastward (BLM, 2003). By the middle Triassic (225 million years before present) the continental margin began to shift westward. Rocks of middle Triassic to Early Jurassic age in eastern Nevada and western Utah consist largely of sandstone, shale, and freshwater limestone (BLM, 2003).

The Sevier Orogeny was the result of extensive regional compression of the earth's crust, generally along the same belt that formed the ancient continental shelf during Paleozoic. In the middle and late Tertiary (starting around 20 million years ago), tectonic forces reversed, resulting in crustal extension. The entire region underlying the present-day Basin and Range province was pulled apart by tensional forces. Large-scale normal (vertical offset) faulting caused huge blocks to be dropped, tilted, or rotated in response to being pulled apart or thinned. In addition, nearly vertical strike-slip (lateral offset) faulting also occurred during the middle and late Tertiary times (BLM, 2003).

The overall result was that north-south oriented mountain ranges (horsts) were raised and tilted, and basins (grabens) formed in the intervening depressed areas. Erosion of the mountain ranges and the subsequent deposition of the erosional debris filled the valleys with several hundred to several thousand feet of sediment. This parallel sequence of mountain ranges and intervening basins, interspersed with mountains of volcanic origin, combine to give the region its characteristic basin-range topography (BLM, 2003).

Corrected "Strike"

The significant outcropping of limestone ledges within the project boundaries reveals a strike in the strata orientation of approximately due north, and a dip of about 80° from horizontal. This corresponds to the dip and strike found in neighboring limestone quarries a few miles to the north. The strike is closely parallel with the east and west perimeters of the quarry. This strata orientation would likely accommodate steeper highwall configurations but certainly the proposed 1:1 configuration would be stable and safe. As mining develops, and some of the underlying strata are exposed Geneva may pursue a variance to allow for a steeper high wall configuration.

106.9. Location and size of ore and waste stockpiles, tailings and treatment ponds, and discharges

Waste/Overburden Stockpiles

Raw materials consist of rock that has been removed from the hillside. Other than the top six inches of material that is set aside for reclamation purposes as topsoil, all rock material removed from the hillside is used to create aggregate products according to customer specifications. No waste rock is generated.

Material Stockpiles

There are several stockpiles of sorted and sized rock products stored on site. The general, current, and future locations of these stockpiles are shown on **Figure 4.** A list of stockpiles and maximum expected volume of each can be found in **Table 6** below.

Table 6: Stockpiles and Estimated Max. Volumes for the N. Grantsville Mine

Stockpile Material	Maximum Volume	Stockpile Material	Maximum Volume
Road Base (1"dia.)	100,000T	Slurry Sand (Type 2)	5,000T
Fines (0.25" dia.)	50,000 T	Drain Rock	30,000T
Sub-base (3" dia.)	50,000 T	Basket Rock (8" dia.)	10,000 T
Chip Rock (0.5" dia.)	30,000 T	Concrete Rock	50,000T
Chip Rock (0.38" dia.)	50,000T	Asphalt Rock (0.75" dia.)	50,000T
Slurry Sand (Type 1)	5,000T	Landscape Rock	5,000T
Natural Fines (0.25"dia.)	50,000T	Concrete Sand	30,000T

Tailings

No Tailings will be produced at this mine.

Water Storage/Treatment Ponds

Water for dust suppression, crushing and screening will be hauled in from outside the project area. Water will be stored in a tank on site until ready for use. Water used in the crushing, aggregate processing and on roads will be absorbed into the gravel and sand, leaving no excess water for run-off. However, in the unlikely event that run-off from the crusher/screening area occurs, water will be directed to the storm water retention basin.

Any storm water run-off coming from affected lands will be collected in the storm water retention basin or within the quarry confines, which, at a minimum, will be sized for the 10-year, 24-hour event, and will be located at the northeast (lowest) corner of the property, just south of the access road (county road). This retention pond is discussed in more detail in 109.4.

Discharges

Currently any water used for dust control or concrete batching will be hauled in from off site sources. Installation of the batch plant is not anticipated any sooner than 2015. All water used in making concrete is held in the concrete slurry and sold as part of the ready-mix product. All water used for cleaning out cement trucks is recycled.

R647-4-107. Operation Practices

As required, the relevant Operation Practices stipulated in R647-4-107 will be followed.

R647-4-108. Hole Plugging Requirements

There are no plans for future drilling within the permit area for exploration. If drilling for any reason other than blast hole drilling is planned in the area, Geneva will notify DOGM and the following procedures will be employed.

- Drill holes shall be properly plugged as soon as practical and shall not be left unplugged for more than 30 days without approval by DOGM.
- Dry holes and non-artesian holes that do not produce significant amounts of water may be temporarily plugged with a surface cap to enable Geneva to re-enter the hole for the duration of set operations.

- Surface plugging of drill holes outside the mine area shall be accomplished by setting a nonmetallic permaplug at a minimum of five (5) feet below the surface, or returning the cuttings to the hole and tamping the returned cuttings to within five (5) feet of ground level. The hole above the permaplug or cuttings will be filled with a cement plug. If cemented casing is to be left in place, a concrete surface plug may not be required is a permanent cap is secured on top of the casing.
- Drill holes that encounter water, oil, gas or other potential migratory substances and are 2.5 inches or greater in surface diameter will be plugged in the subsurface to prevent the migration of fluid from one stratum to another. If water is encountered, plugging shall be accomplished as outlined below.
- If artesian flow (i.e. water flowing to the surface from the hole) is encountered during or upon cessation of drilling, a cement plug will be placed to prevent water from flowing between geologic formations and at the surface. The cement mix will consist of API Class A or H cement, with additives as needed, and will weigh at least 13.5 lbs./gal. It will be placed under the supervision of a person qualified in proper drill hole cementing or artesian flow.
- Artesian bore holes will be plugged as described prior to removal of drilling equipment from the well site.
- If the surface owner of the land affected desire to convert an artesian drill hole into a producing and/or monitor well, the landowner will provide written notification to DOGM accepting responsibility for the ultimate plugging of the drill hole.
- Holes that encounter significant amounts of non-artesian water shall be plugged by: 1) placing a 50-ft cement plug immediately above and below the aquifer(s) or filling from the bottom up (through the drill casing) with a high grade bentonite/water slurry mixture. The slurry shall have a Marsh Funnel viscosity of at least 50 seconds per quart prior to the adding of any cuttings.

R647-4-109. Impact Statement

109.1. Surface and ground water systems

Surface Water

The Geneva N.Grantsville Mine is located on a small sub-ridge located east of the main spine of the Stansbury Mountains. Excavation will first cut into alluvial gravels that partially bury this sub-ridge, but will quickly reach the steeply-dipping limestone bedrock itself. A 1,514-acre ephemeral, first order watershed cuts through the northwest corner of the mine area in these alluvial deposits, and cuts a 2-3 foot deep, partially vegetated channel. The

wash loses its channel to the northeast of the mine as it loses gradient on the lower, flatter outwash plane that is the dominant geologic feature to the east of the Stansbury Mountains.

Because mining will cause most of the water flowing from this watershed to flow into the mine area, watershed runoff modeling using standard Curve Number methodology was used to estimate the runoff volume from this ephemeral watershed. Modeling assuming the 10-year, 24-hour precipitation event (with a total precip. of 1.69 inches), as derived from the NOAA Atlas 14 (National Weather Service 2006). The resultant estimated runoff volume and supporting information are shown in **Table 9** below.

Table 9: Runoff Rate and Volume Estimates for the 10-year, 24-hour Storm Event

Location	Watershed Area (Acres)	Time of Concentration (hrs)	Watershed Curve Number	Peak Discharge (cfs)	Estimated Runoff Volume (Ac-Ft)
Drainage B	1,514	1.0	62	5.149	4.123

*See Stormwater Runoff Calculations and curve selection assumptions as provided by M.Brown Engineering in Appendix D.

Added note

As the quarry develops to the south the negative 1% slope will increase the water holding capacity of the quarry, developing far more capacity than is needed for storm water retention.

There are no identified springs or wells within the Grantsville mine project area. The only water rights in Section 17, 18, 19 or 20 of T2S, R6W listed on the State Engineer's database (http://utstnrwrt6.waterrights.utah.gove.cgi-bin/mapserv.exe), are four surface water rights Geneva owns that are located on ephemeral drainages that are about ½ to ¾ mile southwest of the mine area. These springs are located over a deeper strata of bedrock than the mine area and thus are unrelated hydrologically to the mine area. Their presence provides no indication of groundwater conditions below the mine site itself. These water rights do, however, provide Geneva with 1,000 stock units of water (28.1 acre feet) per year that will continue to be maintained for livestock watering on the property.

The closest groundwater rights that will provide reasonable information about depth to groundwater at the mine site are located in Section 33 of T2S, R6W. These are at a similar elevation and geology as the central portion of the mine. Based on information provided in Section 106.8, no impacts to groundwater are anticipated.

All fuel, oil, and solvents will be stored in approved tanks in lined retention areas located within the process facilities area to prevent pollution to stormwater run-off. In addition, a sediment pond sized for the 10-year, 6-hour event will be constructed to contain any sediment or pollution laden waters generated by the mine. These protective measures are discussed more thoroughly in the Stormwater Management Plan, contained in Appendix H.

Ground water

No ground water is expected to be encountered during future mining activities.

The major activities on the mine property that could impact groundwater if residues were to reach this resource are: 1) blasting (will occur up to 50 times per year); 2) presence of diesel fuel, lubricants, etc. used in the heavy equipment used at the mine, 2) presence of additives used in the concrete batch plant, and 4) human wastes, which are processed through chemical toilets, which are serviced regularly. In summary:

- Good housekeeping practices and careful operating procedures are used to minimize fuel and lubricant spills. Fuel and lubricants are stored in tanks that have secondary containment that protect against spills.
- Crushing equipment and vehicles are regularly maintained to prevent lubricant leaks and other malfunctions.
- The quantities of blasting materials used create negligible quantities of nitrates that, in the unlikely event that they reached the groundwater, would be well below water quality limits.

109.2. Wildlife habitat and endangered species

The project area ranges from 4,800 feet elevation at the northeast corner to 5,600 feet elevation at the southwest corner. The mine area will excavate into a minor ridge on the northeast side of Little Mountain, which is on the lower, east-facing flanks of the Stansbury Mountains.

Maps in the Utah Conservation Database (UCD), located at http://dwrcdc.nr.utah.gov/ucdc/ , indicate that the project area does not contain any significant habitat for mule deer, elk, moose, or pronghorn. However, deer do utilize lands further up into the foothills of the Stansbury Mountains.

The UCD website lists four animal species listed as Utah Species of Concern that may be present in Tooele County in the land form/habitat type located at Geneva's Grantsville Mine. These species are listed below in Table 10, below.

The Utah Natural Heritage Program of the Division of Wildlife Resources was contacted for information about these species of particular concern. Their response letter, attached in the correspondence section (Appendix B), did not list any known records of these species of concern on or within one mile of the project area.

Table 10: Threatened, Endangered, and Candidate Species of Tooele County that could be present in the project area*

Common Name	Scientific Name	Status	Habitat Preferences	Utah GAP Analysis Predicted Habitat west of Grantsville, Tooele County.
Kit fox	*Vulpes macrotis*	SPC^	Open prairie, plains and desert	Substantial value habitat
Ferruginous hawk	*Buteo regalis*	SPC	Flat to rolling terrain in grassland or shrub steppe, often at periphery of Pinyon-Juniper woodlands	Primary breeding habitat
Pygmy rabbit	*Brachylagus idahoensis*	SPC	Areas with tall, dense sagebrush and loose soils	High value habitat
Short-eared owl	*Asio flammeus*	SPC	Grasslands, shrublands, and other open habitats	Primary breeding and wintering habitat

* Information collected July 27, 2007 at http://dwrcdc.nr.utah.gov/ucdc/
^ SPC = Species of special concern.

Based on the information presented in the database it is possible that the kit fox could use the area intermittently and the Ferruginous hawk may use cliffs, ridges, and pinyon-juniper areas of Little Mountain or the slopes of the Stansbury Mountains for nesting. The Pygmy rabbit and Short-eared owl could be found on the mine area, although the area is dissected and sloping with short sight distance, making the area less desirable for these species.

The site was surveyed for Threatened and Endangered (T&E) Species on Sept. 22, 2009 by Ron Kass, Ph.D., Botanist and Professional Wetland Scientist and he determined that there were no T&E plant or animal species on the site (see letter in Appendix D).

109.3 Existing Soil and Plant Resources

After 10 years of mining, approximately 76,633 CY of soil will be stored from the mining operation for reclamation as shown in **Figure 4**. A total volume of approximately 434,793 CY of soil will be available for reclamation once the mine is fully developed.

All topsoil piles will be a maximum of 10 feet high and have 1.5H:1V slopes and a flat to slightly arched top. A 1-foot high X 3-foot wide berm with interior ditch will be constructed around each topsoil stockpile area using material bucked up from the land surface where the topsoil pile is located. The ditch will catch and retain any soil that sloughs off the stockpile, and the berm will prevent contamination and erosion from storm water.

Three topsoil stockpiles will be constructed in the mining area during years 1-10 covering an area of about 5 acres. Two of the stockpiles will be located along the eastern boundary on either side of the quarry entrance. The other stockpile will be located along the western boundary at an elevation of about 4875.

Substitute topsoil material may be developed to augment the topsoil resources available. This substitute material would include a mix of natural or crushed fines, small rock, and pit run material; imported manure and/or organic matter (i.e. agricultural field refuse, wood chips, bran or wheat chaff); and fertilizer to enhance fiber breakdown. This material would be stored and spread separately from actual topsoil resources.

The newly stockpiled soil will be seeded in the fall of each year it has been enlarged with a quick-growing cover of grass and legumes in order to minimize erosion. This seed mix, listed in Table 8, will be broadcast at a rate of 14.5 lbs./acre PLS (pure live seed).

Table 8: Seed Mix for Topsoil Stockpiles

Seed Species		PLS* Pounds Per Acre
Scientific Name	**Common Name**	
Elytrigia intermedia	Intermediate Wheatgrass	2.5
Psuedoroegneria spicata	Bluebunch Wheatgrass	2.5
Achantherum hymenoides	Indian Rice Grass	2.00
Elymus elymoides	Bottlebrush Squirreltail	1.50
Poa sandbergii	Sandberg Bluegrass	1.50
Medicago sativa	Alfalfa	0.75
Agropyron cristatum	Crested Wheatgrass	2.5
Hedysarum boreale	Northern sweetvetch	1.25
	Total	**14.50**
*PLS = pure live seed		

The size of the area stripped in front of the mining and storage areas will be minimized to limit dust generation and the establishment of noxious weeds. At the same time, the stripped area will be large enough to allow equipment to operate on the stripped lands, and contain within the stripped area all fly-rock that could occur from blasting. Fly-rock will be minimized by proper stemming to confine the blast energy. Please see subsections 106.5 and 106.6 for more information about topsoil.

All areas disturbed by Geneva (the bonded area) will be reclaimed at the end of mining by regarding (ripping compacted surfaces where necessary), topsoiling, and re-seeding

as described in Section 110, with the goal of creating a self-renewing, perennial vegetation cover similar to native conditions.

109.4. Slope stability, Erosion Control, Air Quality, Public Health and Safety

Slope Stability

The rock at the N. Grantsville Quarry is massive limestone rock of Mississippian age. During mining, all active high walls will be maintained at 40-foot high walls set back on a 15 foot batter with 25 foot benches. The overall slope of these benched high walls will be 1H:1V. The thin layer of unconsolidated alluvium on top of the lithic formation will be sloped at a 2H:1V along the mine perimeter. Geneva inspects all high walls two times per month. A more extensive high wall inspection is conducted yearly with the MSHA inspector. A factor of safety of 1.25 or greater will be maintained at all times on slope stability. If problems occur with the planned 1H:1V slope, a geologic study will be performed to determine a safe slope configuration.

Please refer to R647-4-110.2, Reclamation Plan – High walls, for further information on slope stability during reclamation.

Erosion Control

Due to the arid nature of the landscape, relatively little run-off is expected from ephemeral drains or overland flow in or near the mine area. If erosion or sedimentation is likely on down-slope, native lands to the east, west, or north of the disturbed mine area, rock check dams or berms will be erected at the edge of disturbance to keep sediments from draining onto these areas. If overland flow originating from native lands up-slope of the mine (to the west occurs), this water will be diverted if possible around the affected area by the MSHA-required safety berms constructed along the highwall. Any erosion or sediment produced on mine-affected lands will be contained within the quarry.

The quarry floor will eventually have a one percent slope to the south (toward the quarry face). This negative slope will cause all stormwater entering the quarry to remain there until evaporated or absorbed into the ground. Until the quarry face gets fully developed, a sediment pond sized for the 10-year, 24-hour event (1.25 inches) will be constructed to catch stormwater and/or mining-related sediments generated at the beginning of mining activity. All water that collects in the quarry at the start of phase 1 will be held in this 3 acre 5' deep pond, constructed at the northeast corner of disturbance. The pond is designed to hold approximately 364% of this event, and will initially be constructed to hold 15 acre feet or 4,875,000 gallons (See Table 11 below).

Erosion of dirt and dust from on roads will be controlled by graveling the road, and grading it to have sufficient crown and drainage ditches to the side so that water does not pond. Sufficient turn-outs from road ditches will be provided to allow water collecting on the road to be released to native lands in a non-erosive manner. Erosion protection for soil stockpiles is addressed under **Soils**, above.

Erosion will be minimized on reclaimed lands by conducting reclamation activities on the contour, with the use of benches and berms on highwalls, and by seeding at the first appropriate time after topsoil spreading.

Air Quality

Initially, Geneva will operate crushers and plants with Temporary Relocation Permits obtained from the State of Utah, Division of Air Quality obtained on an as needed temporary basis. As business increases, permanent site permits will be secured.

Public Health and Safety

Geneva Rock Products will minimize the hazards for public safety and welfare during operations. These measures include:

- No mining shafts or tunnels exist on the site. All buildings, silos, conveyors, and other facilities and equipment are signed to discourage unauthorized or accidental entry in accordance with MSHA regulations.
- A gate at the single access road on the east side of the quarry will be locked when the site is not operating. The perimeter of the permit area will be fenced to prevent unauthorized entry into the permit area during both operating and non-operating hours.
- Trash, scrap metal and wood, and extraneous debris is disposed of in marked containers that are picked up monthly and disposed of at the Tooele County Landfill.
- Although none are planned, any exploratory or other drill holes will be plugged and/or capping of as set forth in Rule R647-4-108.
- Appropriate warning signs will be located at public access points, and every 300 feet along the east boundary.
- All deleterious or potentially deleterious material, such as fuel tanks and supplies of lubricants and oils, are kept in one bermed storage area to minimize and control adverse environmental effects.
- Used lubricating and hydraulic oils are collected in designated tanks and drums and Held for collection by used oil distributors who process it into burner fuels.

R647-4-110. Reclamation Plan

110.1. Current Land Use and Post-Mining Land Use

The current land use of the Grantsville Mine is rangeland and wildlife habitat. The future use will be rangeland and wildlife habitat. The area is currently zoned MP-EX by Tooele County. This zoning allows agriculture, asphalt plants, and manufacturing facilities for coal, gasoline, iron, lime, oil, tar, precious or semi-precious stones/metal, and ore smelting. This site borders an existing MG-EX zone to the south and east and is surrounded by existing mine sites and open space on land that is privately owned or owned by the U.S. government.

A Conditional Use Permit (CUP) is in process with Tooele County.

One pre-existing road provides access to the mine site. It is upgraded as far as the mine entrance, and will be upgraded over time as far as the southwest corner of the quarry to allow access to active mine benches, as described in 106.2. The road will be left as an improved county road upon completion of mining.

110.2. Reclamation of Roads, High walls, Slopes, Leach Pads, Dumps, Etc.

Roads

Upon completion of mining, the main access road that follows the pre-existing two-track (2.4 acres) will be graded back to a two-track road, and drill seeded as described in Reclamation of benches and quarry floor below.

Highwalls

As mining progresses southward, sidewalls will be graded to an overall slope of 1H:1V to reach their final configuration, with 40 foot high walls laid back 15 feet, and 25-foot wide benches in between. All high walls will also be left at this configuration. If mining ceases before the full extent of the quarry is developed, all exposed working faces will be reclaimed to the 40/15/25 configuration noted above.

Slopes & Quarry Floor

Bench surfaces, which become fractured due to blasting and ripping during mining, will create a somewhat friable, rough surface that will hold topsoil and seeds in place. Benches will be 25 feet wide. Highwall berms will be left along those portions of the highwall and sidewall rim that are over five feet high .

Once mining is completed on the quarry floor, any remnants of material stockpiles will be graded across the quarry floor as described in "Disposition of any stockpiles remaining", above. The quarry floor will be graded as necessary using self-loading scrapers and a road grader to create a slightly rolling surface (bond calculations assume an average of six inches of material moved per acre). The floor will then be ripped to a depth of 18" to relieve compaction and encourage root penetration prior to topsoiling. Ripping the quarry floor will create a rough surface to lay topsoil upon. This will help prevent soil erosion and will aid in revegetation efforts by creating small depressions to catch and hold rain and snowmelt and provide wind protection for seeds.

Topsoiling and seeding of benches and the quarry floor is discussed under 110.5 below.

Impoundments, Pits and Ponds to be Left

Water control structures such as ditches and water turn-outs associated with the Little Mountain Road access road will be left in place for future use. Road reclamation is explained under Roads, above.

The sediment sump/stormwater retention basin at the northeast end of the mining area built to collect runoff from the stockpile and processing area will be backfilled and graded to blend with surroundings. This work will be the last area reclaimed to minimize the chance for off-site sediment. The area will be prepared and seeded as part of the quarry floor as noted above.

Added note

A five acre area in the lowest point of the quarry will not be covered with topsoil and will be drilled and shot 20' deep to "fluff" the bedrock to create a sump that will facilitate percolation of accumulated storm water into the quarry substrates. Rip rap energy dissapaters will be placed at the foot of the high wall in locations where stormwater run off streams down the highwall to sufficiently dissapate hydraulic energy.

Drainages

Any drainages flowing over the alluvial caps on top of the high-walls into the quarry depression will be lined with 8" x 24' rock to prevent erosion.

Dumps, Shafts, Adits and Leach Pads

No waste material will be generated, therefore no reclamation of dumps will need to be completed.

There are no shafts, adits or leach pads on the property and none will be constructed.

Drill Holes

If drilling occurs, holes will be properly plugged and sealed as required in Section R647-4-108.

110.3. Surface Facilities to be left

The access road will not be reclaimed after completion of mining. The surety bond does not include the cost of access road reclamation.

No structures will be left. All facilities will be reclaimed. Approximately 1.6 acres of two-track roads will be maintained in reclamation to allow access and monitoring of the reclaimed mine.

A list of structures to be reclaimed is included in the Demolition section of the Surety Calculations located in Appendix F.

All facilities will be demolished after salvaging metals and removing insulation, tile, etc. Concrete will be broken up and buried on site. Other materials will be hauled to a licensed landfill and disposed.

110.4. Treatment, location, and Disposition of Deleterious Material

Potentially hazardous insulation, tile, and non-salvageable debris from demolition will be removed to a licensed landfill. All tanks will either be removed to a licensed landfill upon reclamation or sold. The surety calculations contained in Section 113 assume these items are disposed of at the Tooele County Landfill located south of Tooele on the Bouer Road.

All conveyors, crushers, screens, concrete plant, asphalt plant and other equipment used for mining and processing of aggregate will be removed upon reclamation or sold. The surety calculations contained in Section 113 assume these items are disposed of at the Western Metals Recycling Center in Salt Lake City.

110.5. Re-vegetation Planting Program and Topsoil Re-distribution

After final shaping and grading of the quarry floor, concrete batch plant area, slopes, and roads within the disturbed area, surfaces will be ripped and/or scarified on the contour to relieve compaction.

Soil Material Replacement

Topsoil and topsoil substitute material (described under Sub-section 109.3) will be spread on the quarry floor and plant areas using self loading scrapers to place soil, and

a grader to spread soil. Topsoil will be spread to a depth of six inches. Marked lath will be used to guide dozer operators to the correct topsoil depth. Topsoil will be placed 6" deep on high wall benches where possible. The steep slopes between the benches will not be covered with topsoil or reseeded.

Seed Bed Preparation

Prior to spreading any topsoil or topdressing, stockpiles will be tested for organic matter, Nitrogen, Phosphorus, and Potassium. If these levels are low, composted manure will be applied to the solid or topsoil substitute after it is spread.

Topsoil will be laid down with a scraper, and if needed, composted manure at 10 ton/acre will be spread. All surfaces will be scarified along the contour with a road grader to assure mixing of the soil and manure to create consistent-textured soil and a roughened surface that will hold the seed and moisture for best germination.

Seed Mixture

Table 10 below provides the seed mixture that will be used in reclamation on all bonded, disturbed areas at N. Grantsville Quarry that are 3:1 or flatter, including highwall benches. Drill and broadcast seeding rates would be the same.

Table 10: Reclamation Seed Mix for N. Grantsville Quarry

Common Name	Scientific Name	PLS Pounds/Acre
'Hycrest'Crested Wheatgrass	*Agropyron cristatum'Hycrest'*	0.4
Intermediate wheatgrass	*Agropyron intermedium*	1.5
Western Wheatgrass	*Agropyron intermedium*	1.5
Indian ricegrass	*Oryzopsis hymneoides*	1.2
Ladac Alfalfa	*Medicago sativa*	0.8
Yellow sweetclover	*Melilotus officinalis*	0.4
Palmer penstemon	*penstemon palmeri*	0.4
Small burnet	*Sanguisorba minor*	0.8
Mtn Big Sage	*Artemesia Tridentata vaseyana*	0.1

Globe mallow	*Sphaeralcea coccinea*	0.4
Rubber rabbitbrush	*Chrysothamnus nauseosus*	0.4
Forage kochia	*Kochia prostrata*	0.4
	Total Rate to be Seeded	**8.3**

Seeding Method

All disturbed areas excepting the sump and steep slopes between benches will be seeded using a range-type drill seeder.

Fertilization

Prior to spreading any topsoil or topdressing, stockpiles will be tested for organic matter, Nitrogen, Phosphorus, and Potassium. If these levels are low, 10 tons of composted manure per acre will be applied to the soil or topsoil substitute after it is spread. Soil amendment quantities will be approved by DOGM prior to application.

Other Re-vegetation Procedures

None.

R647-4-112 Variance

No variances are proposed with this application.

R647-4-113 Surety

The reclamation surety calculations are contained in Appendix F. A summary of the estimated costs of reclamation for phase I is included below.

1. Demolition and removal of structures	$352,007.00
2. Backfilling, grading, and contouring	$320,843.00
3. Revegetation (preparation, seeding, mulching)	$105,000.00
4. Subtotal Direct Costs	$777,850.00
5. Mob/Demob	$77,785.00
6. Contingency	$38,893.00

7.	Engineering Redesign	$19,446.00
8.	Main office Expense	$52,894.00
9.	Project Management Fee	$19,446.00
10.	Subtotal Indirect Costs	$208,464.00
11.	Escalation	$23,244.00
12.	Reclamation Costs Escalated	$1,009,558.00
13.	Bond Amount for 95 acre disturbance (rounded to nearest $1,000)	$1,010,000.00

References

Natural Resources Conservation Service (NRCS 2008) Web Soil Survey: Eastern Box Elder County Area, Utah. Available online at: http://websoilsurvey.nrcs.usda.gov/ Accessed Oct. 2008.

Utah Conservation Data Center, 2007. Sensitive Species List by County. Available online at: Http://dwrcds.nr.utah.gov/ucdc/ViewReports/sscounty.htm Accessed Oct. 2008.

Utah Division of Water Rights, 2007. Water Right Record Information. Available online at: http://www.waterrights.utah.gov/wrinfo/query.asp Accessed October 2008